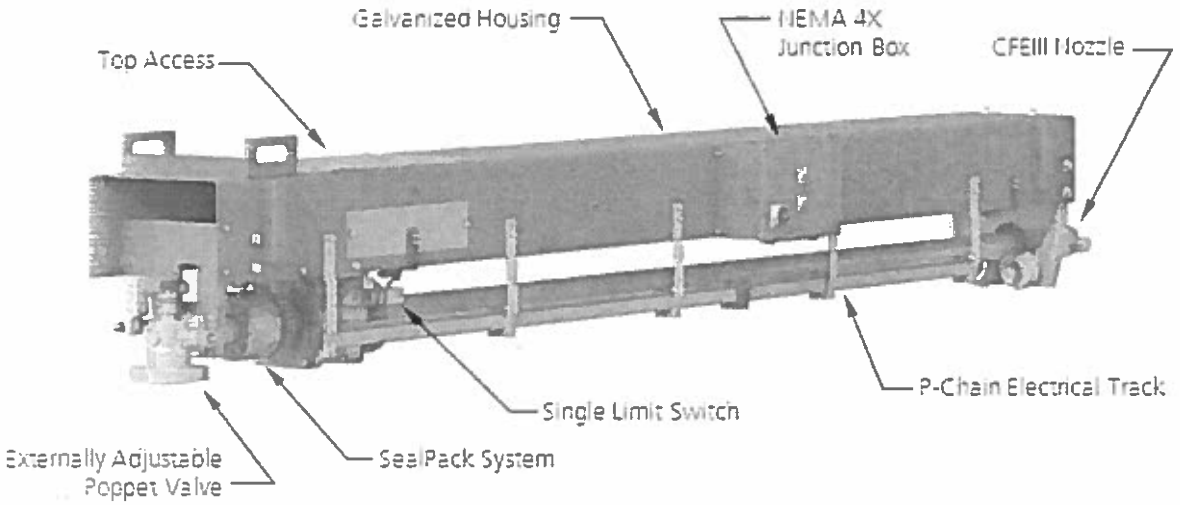
Attachment A – Product Description

US Retract Description

The Clyde Bergemann US is the most severe duty retractable sootblower available. Built on the same rugged platform as our recovery boiler retracts, the US is more reliable, easier to maintain and outperforms chain drive or "IK" style retracts. We have noticed our competition has copied some of our earlier design improvements such as the P-Chain electrical track and the top access for ease of maintenance. However, the US maintains its advantage with continuous improvement of our original designs, and now features several design standards not found in any other utility sootblower.

STANDARD FEATURE	CUSTOMER BENEFIT
Balanced Drive Carriage	✓ Eliminates oil leaks and pinion failures in "handed" carriages ✓ Eliminates excessive rack wear due to uneven load distribution ✓ Reduces spare parts
Modular Drive Carriage	✓ Shortens gearbox removal from 4 hours to less than 1 hour ✓ Extends service life due to reduction of heat transfer to gears
SealPack™ System	✓ Extends packing life ✓ Reduces packing replacement time
Externally Adjustable Poppet Valve	✓ Allows for easy On-line pressure adjustment ✓ Eliminates safety concerns and lock-out/tag-out requirements
Hot-Dipped Galvanized Housing	✓ Superior corrosion resistance ✓ Lifetime Warranty
CFEIII Nozzle	✓ Reduces blowing media consumption
Single Limit Switch	✓ Eliminates failure prone fixed limit switches



Housing

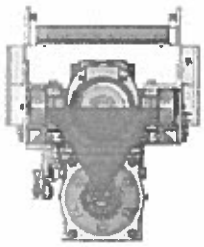
The US is structured around a heavy-duty housing that acts as the backbone of retractable sootblowers. The housing consists of a formed canopy, with welded angle and square tube along the length of the interior, providing unmatched structural integrity. At the rear of the housing, we provide access for removal and maintenance of the gearbox, cutting labor in half compared with other retracts. The housing also comes hot-dipped galvanized for extreme corrosion resistance. This, combined with the superior design, allows us to offer the industries only lifetime warranty on our housing.

Carriage Assembly

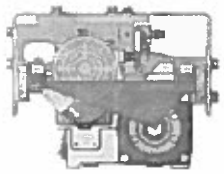
Standard with all Clyde Bergemann retracts is a center balanced, modular construction drive carriage. The center balanced design eliminates problems inherent with "handed" style carriages such as excessive oil leaks and pinion failures due to unbalanced load distribution. The Clyde Bergemann carriage overcomes these deficiencies by centering the travelling carriage squarely between the dual rack drives. As a result the load is evenly distributed on each side of the housing, increasing life and reliability.

Another advantage of the Clyde Bergemann carriage is the modular design. Due to the single housing style of "handed" carriages, maintenance and removal can take up to 4 hours as removal of the lance and feed tube are required. The modular design eliminates the need to remove the lance and feed tube through the separation of the gearbox from the lower housing. As a result, the gearbox can be removed through the top of the housing in less than 1 hour. In addition, the modular design reduces the heat transfer between the high temperature cleaning medium and the drive gears. By running cooler, gearbox life is increased and seal failure is reduced.

Clyde Bergemann | **Other**



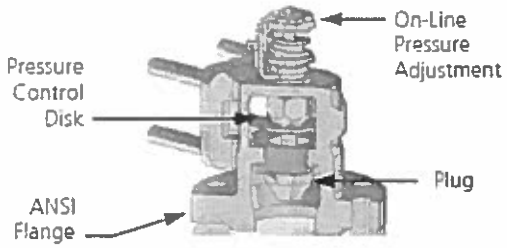
Balanced Design (Modular Construction)



Unbalanced Design (Single Housing Construction)

Poppet Valve

With cleaning media blowing pressures becoming a critical matter with regard to boiler cleanliness and efficiency, frequent verification and adjustment is required to prevent over or under cleaning. This labor intensive process is simplified through the use of Clyde Bergemann's Externally Adjustable Poppet Valve, in which pressures are easily set while the sootblower is on-line.



Each poppet valve is manufactured from WC6 material and is available in either ANSI 600# Class or ANSI 900# Class. In addition, each poppet can be purchased with a pressure gauge or pressure switch mounted to the sootblower.

Lance and Feed Tube Assemblies

Lance and Feed tubes are fabricated under a robust process, using automated welding and strict inspection and test procedures to ensure no tubes fail prematurely. 100% of lance and feed tubes must pass our quality control process, monitored by certified inspectors, prior to being installed in the sootblower.

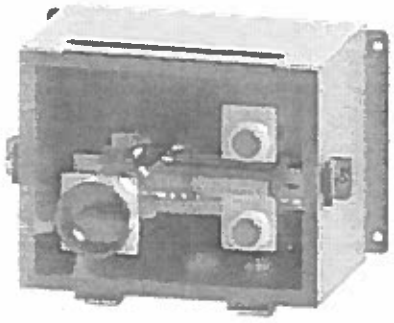
Standard lance material is ASTM 4130, but sootblowers can be purchased using ASTM 6330 for elevated flue gas temperatures. Feed tubes are manufactured from 301 or 304 stainless steel and are available to be purchased with increased surface hardness through our Armor Glide process.

Each lance comes standard with two High Energy/High Efficiency CFEIII nozzles. This patented nozzle allows the blowing media to fully expand, making it the most effective and efficient nozzle available in the market. Each nozzle is investment cast, made from 301 stainless steel. Nozzle sizes are determined by Clyde Bergemann engineers to ensure the proper diameter is selected to deliver the most effective cleaning intensity.

Electrical

Every Clyde Bergemann retract is supplied with a NEMA 4X Stainless Steel Junction Box, complete with insert and retract push buttons, terminal strip, indexing timer relay and a rotary disconnect switch. Available as options for purchase are reversing contactor, overload relay, emergency retract relay and Harting type connectors.

Wiring throughout the sootblower is done through a P-Chain design. This design uses an SO cord type cable, threaded through a chain carrier to eliminate tension or rubbing on the power supply wires. Each cable also comes standard with a pull apart plug connection at the motor.



Position control is facilitated through a single limit switch design. By utilizing a single, travelling limit switch reliability is increased over traditional dual, fixed position designs. This is due to the elimination of the forward limit switch being exposed to high ambient heat, causing premature failure.

Wallbox

Clyde Bergemann supplies a heavy-duty socket-weld wallbox assembly designed to attach to existing sleeve pipes. This assembly is compatible for positive, balanced or negative pressure boilers. Connections to supply sealing air come standard and are plugged if not used. Sleeves are not provided by Clyde Bergemann, but must be large enough to allow insertion and retraction of the lance without interference. Minimum sizes are listed as follows: 5"-Sch.40 for 3 ½" OD Lance, 6"-Sch.40 for 4" OD Lance, 8"-Sch.40 for 5" OD Lance